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10/784,175	02/24/2004	Yukitoshi Sanada	249224US6	9281
22850	7590	03/18/2008	EXAMINER	
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			TSE, YOUNG TOI	
			ART UNIT	PAPER NUMBER
			2611	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com
oblonpat@oblon.com
jgardner@oblon.com

Office Action Summary	Application No. 10/784,175	Applicant(s) SANADA ET AL.	
	Examiner YOUNG T. TSE	Art Unit 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 December 2007 and 13 November 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 and 13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 December 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>20071113</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed on November 13, 2007 have been fully considered but they are not persuasive.

Argument: regarding the rejection of claims 3-8 rejected under 35 U.S.C. § 112, first paragraph, Applicants argue that the support for the claimed feature can be found at least at p. 22, 1.20-p. 23, 1. 23 and Fig. 4 of the originally filed application as recited in claim 3.

Response: the examiner agrees. However, claims 3 and 5-6 recite the power controlling section is configured to select a receiving antenna for signal reception or from which a stationary reception signal can be obtained. Clearly, as shown in Fig. 4 and discussed in the specification of the present invention, the switch controlling section 23 performs the claimed features of claims 3 and 5-6, but not the power controlling section 22. Claims 4 and 7-8 are also rejected under 35 U.S.C. § 112, first paragraph because they depend from claim 3.

Argument: regarding the rejection of claims 1-8 and 13 rejected under 35 U.S.C. 103(a), Applicants argue that the power supplied to each of the RF receiver sections 104, 106 of Crawford is not controlled based on any output sub-carrier selection information. More specifically, Crawford fails to teach or suggest controlling power supplied to each of the RF receivers 104, 106 based on sub-carrier selection

information output from the sub-carrier selection diversity module 602 or the diversity antenna selection modules 550, 600.

Response: the examiner respectfully disagrees. The diversity antenna selection module, for example, 600 shown in Fig. 18B comprises a diversity antenna decision 642 to control the switch 101 of the RF receiver branches based on sub-carrier selection information from the multiplexer 634. See paragraphs [0169] and [0170]. Although the diversity antenna selection module 600 does not explicitly show or suggest controlling power supplied to each of the RF receivers 104, 106, the examiner agrees that the diversity antenna selection module 600 is not directly controlling power supplied to each of the RF receivers 104, 106, inherently, the diversity antenna selection module 600 is indirectly controlling power supplied to each of the RF receivers 104, 106, for example, when the switch 101 is open or disconnected with the RF receiver 104 and/or the RF receiver 106 controlled by the diversity antenna decision 642, there is no measurement power through the RF receiver 104 and/or the RF receiver 106. Therefore, it may consider that the diversity antenna selection module 600 controls power supplied to each of the RF receivers 104, 106 through the switch 101 based on sub-carrier selection information from the multiplexer 634. However, based on Applicant's arguments, the rejection of claim 8 has been withdrawn.

Drawings

2. The drawings were received on December 20, 2007. These drawings are acceptable.

Claim Objections

3. Claims 4-8 and 13 are objected to because of the following informalities:

In claim 4 (line 4), claim 5 (line 3), and claim 6 (line 3), “an antenna” should be “a receiving antenna”.

In claim 4, line 5, “said Fourier transforming section” should be “said Fourier-transform section”.

In claim 6, line 4, “each antenna” should be “each receiving antenna”.

In claim 7, lines 3 and 5, “provided for” and “an open/close switch” should be “coupled between” and “the open/close switch”, respectively.

In claim 8, line 4, the word “all” should be deleted.

In claim 13, lines 5 and 6, “radio frequency band signals” and “said analog” should be “a radio frequency band signal” and “said”, respectively.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 3-8 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The configuration of claims 3 and 5-6 contains subject matter which does not correspond to the disclosure of Figure 4 and was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. For example, claims 3 and 5-6 recite the power controlling section (22) selects an antenna (11) of a received signal. However, as shown in Fig. 4, the switch controlling section (23) controls the switches (12-1 to 12-L) to select one of the antennas (11-1 to 11-L).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 1-7 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Crawford et al., U.S. Publication No. 2003/0002471A1 (hereinafter "Crawford") in view of the Fig. 2 of the instant application.

Crawford discloses an OFDM diversity receiver in Fig. 1 comprising a plurality of antennas (A1 to A6), switches (101), RF receivers (104, 106), and a diversity antenna selection and sub-carrier selection diversity module (108).

Fig. 17 illustrates a block diagram of an exemplary diversity antenna branch selection module (550) which may be used in the diversity antenna selection and sub-carrier selection diversity module (108) of Fig. 1.

Figs. 18A and 18B illustrate exemplary implementations of a sub-carrier selection diversity module (602) and a diversity antenna selection module (600), respectively, which may be used in the diversity antenna selection and sub-carrier selection diversity module (108) of Fig. 1.

Regarding claims 1, 4 and 13, the OFDM receiver comprises a plurality of receiving antennas (A1-A6); a carrier restoring section or an RF receiver (104 or 106) provided for each of the plurality of receiving antennas, wherein each of the RF receivers discloses a Fourier-transform section or an FFT only as shown in Fig. 18A; a sub-carrier selecting section (550 of Fig. 17, 602 of Fig. 18A, 600 of Fig. 18B) for comparing powers of output signals from the carrier restoring section provided for each sub-carrier, and selectively combining the powers of the output signals for each sub-carrier; and a power controlling section (550 of Fig. 17, 602 of Fig. 18A, 600 of Fig. 18B) for controlling power supplied to the carrier restoring section connected to the receiving

Art Unit: 2611

antennas, based on sub-carrier selection information from the sub-carrier selecting section. Although Crawford does not explicitly show or suggest that each of the RF receivers (104 or 106) comprise a radio frequency and intermediate frequency section for down-converting a reception signal from a radio frequency band to a base band signal and a digital converter for converting an analog base band signal of the RF and IF section into a digital signal to the FFT circuit, it is inherent or well known to a person skill in the art that any receiver, such as the RF receiver (104 or 106) is capable of including an RF and IF section for converting a radio digital into an intermediate signal and a digital converter for converting the analog intermediate signal into a baseband digital signal prior converting the baseband digital signal to a Fourier transform circuit, wherein most Fourier transform circuits are performed in digital manner.

The prior art Figure 2 of the instant application also shows that an RF front end receiver includes an RF and IF circuit (130) and an A/D converter (14) prior the transform section DFT (15).

Therefore, it would have been obvious to one of ordinary skill in the art as taught by the prior art Fig. 2 of the instant application that Crawford's RF receiver (104 or 106) is capable of including an RF and IF section and an A/D converter for down converting the RF signal into IF signal first and converting the analog IF signal into digital signal in order for the FFT circuit to process the transformation of the digital signal.

Regarding claim 2, again, it is inherent or well known to a person skill in the art as shown in the prior art Fig. 2 of the instant application that an interleaver (6) and a

decoder (7) are used in an OFDM receiver after the selection and combination of the diversity channels, for instant, for error correction of the received signal.

Regarding claims 3 and 5-7, the selection of the antennas or the power control of the RF receivers is controlled by the diversity antenna branch selection module (550) of Fig. 1, the sub-carrier selection diversity module (602) of Fig. 18A and/or the diversity antenna selection module (600) of Fig. 18B.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to YOUNG T. TSE whose telephone number is 571- 272-3051. The examiner can normally be reached on Monday-Friday 10:00-6:30 PM, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad H. Ghayour can be reached on 571- 272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/YOUNG T. TSE/
Primary Examiner, Art Unit 2611